

Date\_\_\_\_\_

Name\_\_\_\_\_



# Forces and Simple Machines

## FINAL ASSIGNMENT

### The Task:

- With the given materials, you are to make a vessel that is capable of traveling 3 metres under its own power. (A Machine)
- You will write a report on the obstacles your object faces to move, why it moves, and how it moves. (A report)

### The Materials:

String (Unlimited)  
Paper Clips (4)  
Chassis (Bottle) (2)  
Balloon (1)  
Cereal Boxes\*

Bottle Caps (4)  
Electricians Tape (Unlimited)  
Magazine Cut-outs (For advertising)\*  
Straws (4)

\*Students must supply the magazine cut-outs and cereal boxes.

### The Steps:

- Brainstorm the ideas of how you can move a vessel without throwing it.
- Sketch a few designs of what your machine will look like.
- With the given materials, create a machine. Test and improve it.
- Write a report that explains what forces are needed to be overcome for your machine to move. What are the characteristics of your machine that made it move?

Review the grading criteria on the back of this sheet before submitting your assignment to ensure that you have completed the criteria. Hand this sheet in with your written report.

Date\_\_\_\_\_



Name\_\_\_\_\_

## **Grading Criteria:**

### **Part One**

#### **THE MACHINE** **/10**

- 10 The machine succeeds in travelling three metres in roughly the desired direction. An attempt is made to make the machine aesthetically pleasing and to limit the materials used to that which are needed. Ideas are very creative.
- 8.5 The machine might not travel three metres. Some attempt is made to make the machine aesthetically pleasing and to limit the materials used to that which are needed. Creativity is used to make the machine.
- 7.5 The machine is unable to travel any significant distance. Somewhat creative. Machine is unappealing.
- 0-5 More effort is needed.

### **Part Two**

#### **THE REPORT** **/30**

##### **Explanation**

- 25 Excellent explanation of the resistant forces that the machine overcame to move. Thorough explanation was also given of how the characteristics of the machine overcame these forces to allow a particular type of movement.
- 20 Good explanation of the resistant forces that the machine overcame to move. Fairly good explanation was also given of how the characteristics of the machine overcame these forces.
- 15 Satisfactory explanation of the resistant forces that the machine overcame to move and how the characteristics of the machine allowed it to overcome these forces.
- 0-10 More effort is needed.

##### **Formatting**

- 5 The report contains few if any spelling or grammar errors. It contains a title and proper headings.
- 3 The report contains spelling and grammar errors. Titles and headings may be missing or unclear.
- 0-2 More effort is needed.